

ART. X.—*Two new Victorian Palaeozoic Sponges.*

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(With Plate XIV.).

Protospongia oblonga, n.sp. (Pl. XIV., Figs. 1-3.

Sponge vasiform; width about 4 cm.; height of the imperfect specimen about 5 cm., tapering roundly towards the base. Spicular meshwork with oblong interspaces. Spaces between the primary spicules about 3 mm. broad and 4 mm. long. Primary and secondary spicules present, but apparently none of a higher order. Flesh spicules closely covering the interspaces, their true shape and arrangement being uncertain, some appearing merely as short straight rods and others as small crosses.

The skeleton is pyritized and preserved in a hard black shale, which adheres in a thin film to the surface of the spicules so that they show as fine raised lines, or where removed, as distinct grooves. The ends of the primary spicules are seen to overlap in a few instances, and occasionally separation has taken place along the oblique line of junction, thus showing the essential Lyssakine nature of the sponge. The pyritous replacement of the spicules has occasionally been dissolved, either wholly or partly, leaving a hollow cast, and one such cast shows a canal running down perpendicularly to the plane on which the sponge lies, thus clearly demonstrating the presence of a fifth ray. Dr. G. J. Hinde¹ points out the natural difficulty which exists in detecting a fifth ray if it were present, and speaking of the Quebec Hexactinellidæ generally, says that judging by the analogy of allied recent forms it is probable that, in most cases, these spicules were furnished with a fifth ray at right angles to the other four. Both before and after this date, however, he

¹ Proc. and Trans. Roy. Soc., Canada, vol. vii., 1890, sec. iv., p. 36.

speaks of *Protospongia* as having cruciform spicules.¹ Rauff² says that in the family of *Protospongiadæ* the thin wall consists of a single layer of *Stauractinen*, by which he means the same thing, while further on in the same work he says³ that rudiments of a fifth arm are frequently displayed, and that the question is an open one as to whether pentactins were not universally present, the radial arm being broken off. In the present case the radial arm can be traced inwards at any rate for more than twice the diameter of the other rays, so that the term rudimentary would hardly apply in the case of this single spicule. Whether all the spicules were of this nature is a point on which the specimen as a whole throws no light.

Skeleton spicules of the first and second order are present, and the spaces which they enclose are oblong in form, their length being about one-and-a-half times their width. The smaller interspaces are crowded with a confused network of flesh spicules, many of which are cruciform, while of others the form cannot be clearly made out.

The species may be readily distinguished from all others of which I can find a record by the oblong character of the meshwork. In addition it differs from *P. reticulata*, mihi, from Bendigo by its general shape.

Locality.—Lancefield. Probably Lower Ordovician. Found by Mr. G. B. Pritchard, to whom I am indebted for the opportunity of examining the specimen.

Stephanella (?) *maccoyi*, n. sp. (Pl. XIV., Figs. 4, 5).

Form of the sponge an elongate oval. Spicules in the form of oxea, generally straight but occasionally curved, thicker in the middle and gently tapering to a point at each end. Arranged in a radiating manner. Anchoring spicules doubtfully preserved, and if present showing that the longer axis was the vertical one. Flesh spicules not observed. Height about 60 mm. Breadth about 30 mm.

¹ Brit. Mus. Cat. Fossil Sponges, 1883, p. 129. Palæontographical Soc., 1888, vol. xli., p. 105.

² Palæontographica, vol. xl., 1893, p. 187.

³ *Ibid.*, p. 235.

The specimen is preserved as a series of ferruginous grooves in a pale grey decomposed slate, together with limonite pseudomorphs after pyrite in small cubes which are scattered in patches throughout the mass. Owing to the method of preservation it is not certain whether the slightly thicker spicules, which I regard as anchoring ones, do not owe their size and form to the spreading of the iron oxide along the cleavage planes, though I am inclined to the opinion that they were originally larger and stouter than those occurring elsewhere on the slab. If so, then they may be considered as anchoring spicules, in which case the vertical axis is at right angles to that in *Stephanella hindii*, Dawson,¹ from the Utica slate at Ottawa. In this species, Sir J. W. Dawson figures some small cruciform spicules on the outer surface, which he considers to be flesh spicules of this species. I have not been able to detect any such forms in the present specimen as no fine details are preserved, the oxidation of the pyrites having destroyed all traces of the more delicate parts of the skeleton.

Sir Frederick M'Coy, to whom I have shown the specimen, has directed my attention to the spicule shown in Fig. 5, and is of opinion that possibly it indicates the presence of V or Y shaped spicules, though of course, owing to weathering, it is impossible to speak with certainty on the point. There are other places where similar appearances are exhibited, but I think that oxea which evidently cross one another can be found lying approximately parallel to each of the arms of the V, and this being so I am inclined to regard the apparent forking as due merely to the accidental juxtaposition of two oxea. Should forked spicules of this nature occur the sponge cannot of course be monactinellid, but would probably be referable to the Tetractinellidæ. After careful consideration I am inclined to the opinion that the sponge finds its true position amongst the Monactinellidæ, and I refer it doubtfully to *Stephanella*, Hinde.² From *S. hindii* it differs in shape, for in Sir J. W. Dawson's species the greatest length is horizontal while in the present one it is vertical. The determination of the base of the specimen depends in part on the recognition of the

¹ Trans. Roy. Soc. Canada, 2. S., vol. ii., 1896, sec. 4, p. 116.

² Geol. Mag., 1891, p. 22.

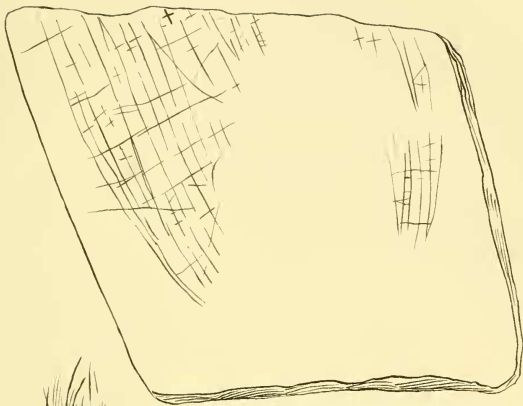


Fig. 1.

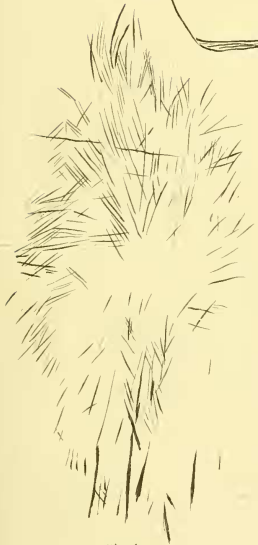


Fig. 4.



Fig. 2.



Fig. 5.



Fig. 3.